


Reduce 5G Complexity with Automated Testing



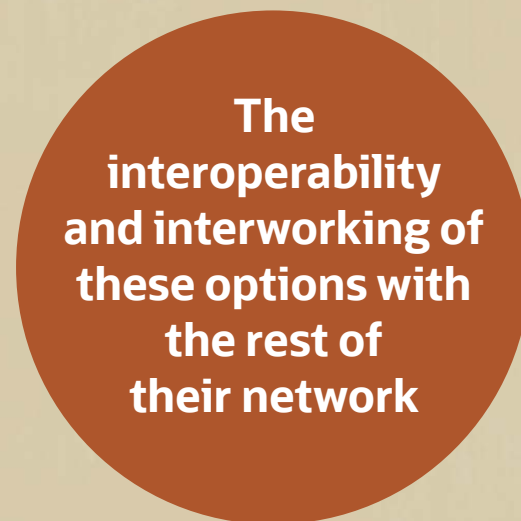


Why is core network software testing even more important in 5G?

Manual testing was never desirable but with testing experts increasingly working from home, automated testing takes on a new level of importance. DevOps and agile software development through automated processes and tools must be adopted to handle functional, regression and performance test cases with the click of a button.

Service Based Architecture (SBA) is one of the cornerstones of the new 5G core: it applies IT network technologies to mobile services, enabling greater service innovation and offering sizable benefits to operators. However, the SBA is a major departure from previous generations of mobile networks in terms of how different network elements are deployed and managed. Operators need to look deeper and consider how to leverage and possibly improve the IT-based SBA tools to support the needed attributes for telecom services.

Unlike previous generations of core and radio access technologies, 5G makes it possible to integrate elements of different generations into different configurations. Because of that, several options become available for evolving to 5G. Telecom operators should carefully consider the practicality of different options across many variables. This includes:



Consequently, the multivendor and complex multilayer 5G network requires a new paradigm in testing methodology, one where automation plays a critical role.



Accelerate innovation, by significantly shortening software delivery times, and enabling full test and deployment automation

Automation is one of the most effective tools for agility. To succeed with automation, it is necessary to incorporate both development and operations, otherwise known as DevOps. In “[Cloud Native Journey for Telecoms](#)”, we talk extensively about the importance of a DevOps culture, continuous integration and continuous delivery (CI/CD), microservices and our overall approach to cloud native technologies.

It is important to note, however, that while DevOps enables CI/CD, you cannot have continuous delivery without continuous testing. This can be achieved by a unified and automated testing framework that improves the execution speed of verification checks or any other repeatable tasks in the software development lifecycle. In fact, in our current Covid-19 era, automation is an even more critical requirement for the industry. The current pandemic has made a lasting impact on distributed IT operations by increasing the remote workforce. As a result, automation plays a key role in improved productivity and operational efficiency.

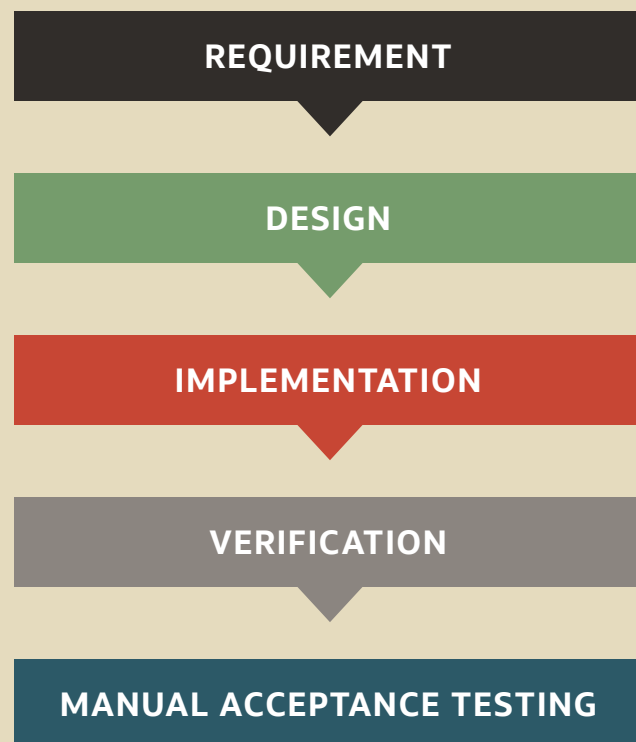
*COVID-19: Impact on telco priorities, Findings from industry research, STL Partners, May 2020

In a recent survey conducted by STL Partners* about Covid-19's impact on telecoms priorities, “automation” ranked as the technology most likely to be prioritized within telcos during COVID-19.

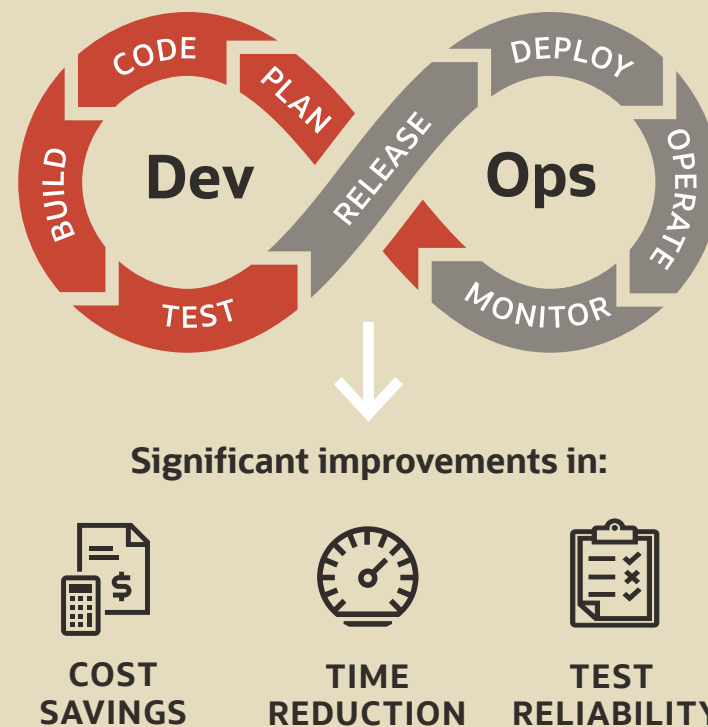


Benefit from modern software delivery with an automated testing framework

Traditional approach to software release



New approach to software release | DevOps



S/W Delivery Frequency/Year*



Testing Cycle**



*Based on approximations
*Approximation based on Oracle derived benchmark

More reliability, more security, and fewer human errors with automation

Network speed, low latency and increased capacity are the key benefits of 5G. In fact, avoiding network outages, protecting the network, and customers information, ensuring quality of service and the rapid delivery of new services are at the forefront of operators' priorities.

Automating the testing framework substantially reduces human errors and lays the foundation for DevSecOps. In other words, selecting the right tools to continuously integrate security in development and operations elevates security as a fundamental element from inception to completion. All the while ensuring that everyone along the way is responsible for security.

In a recent survey by [Gitlab](#)—



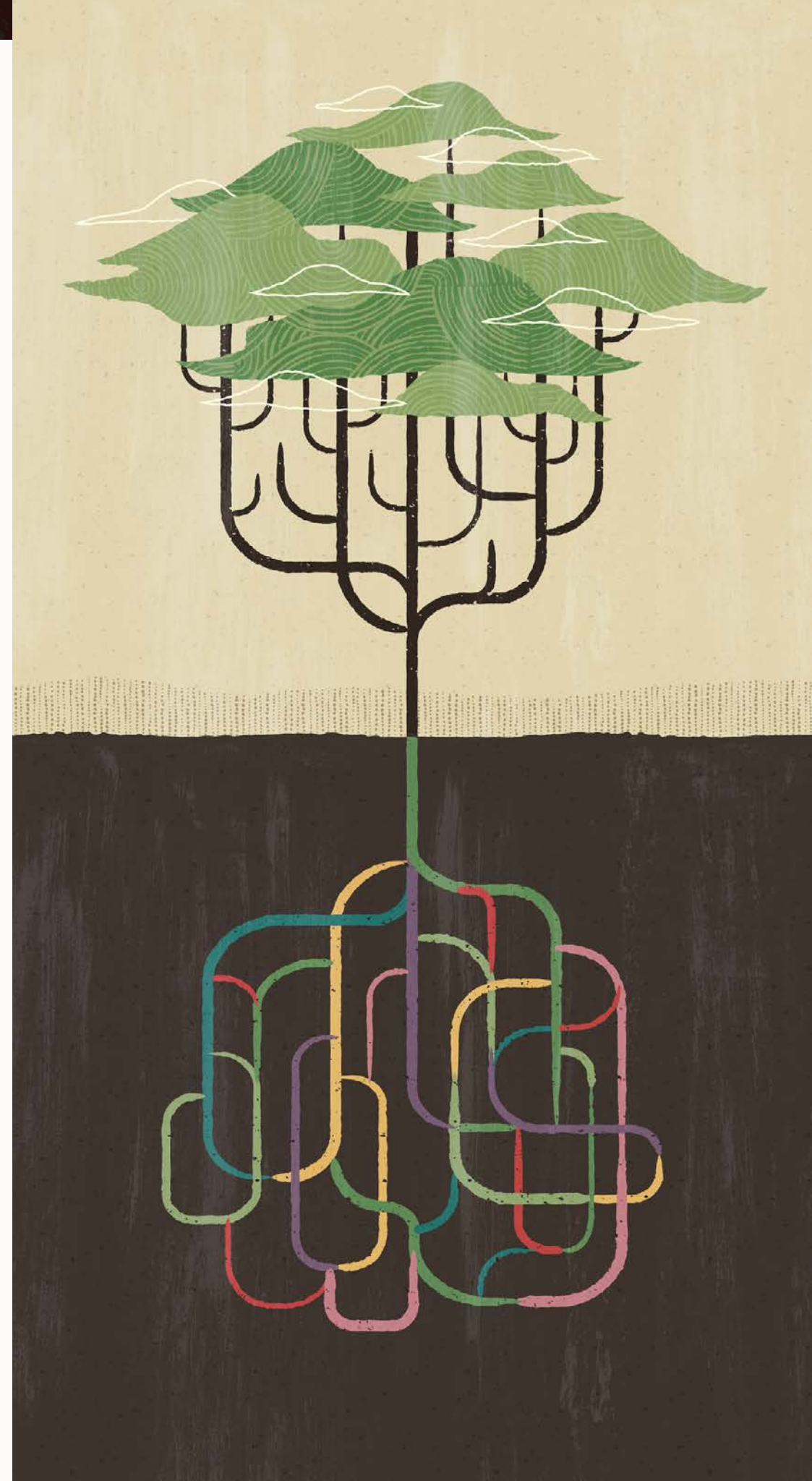
47%

of Companies claim that testing is number-one reason for delay.



35%

believe that testing helps provide better security to software releases.





Manual Testing vs Automated Testing

FEATURE	MANUAL TESTING	AUTOMATED TESTING
Capital Intensive	Yes	One time cost for setup and training
Demands Manpower	Yes	No
Time Consuming	Yes	No
Prone to Errors	Yes	Less
Repetitive	Yes	No
Agile or Compatible with DevOps and CI/CD/CT	No	Yes
Reusability	Less	More
Enable Security	Less	More
Overall Test Coverage	Low	High

Benefits of automated testing in telecom

Undoubtedly, the highly dynamic service based architecture of 5G helps operators offer a competitive and differentiated mix of 5G services. This will require shorter testing cycles to deliver more rapid updates. Incorporating a robust and flexible

automated testing suite will help operators accelerate the pace of delivering seamless and differentiated customer experience across the various technology fabric in their network, spanning 4G and 5G.

Automated testing helps operators to:

**Verify newer
versions of software
more efficiently**

**Rollout new
platforms faster**

**Apply configuration
changes more easily**

**Expand and grow the
network according to
business requirements**

**Ensure more
resiliency in the core
network**

**Perform accurate
benchmarking
and capacity planning**

**Adopt a testing framework that
can deliver services faster, simpler,
and more cost effectively**

Oracle Communications Automated Test Tools and Scripts (ATS)

As software delivery evolves and improves through the use of DevSecOps and CI/CD, the number of software releases delivered per year will also significantly increase. With that, manual testing will become even more challenging when validating each software release.

The Oracle Communications Automated Test Tools and Scripts (ATS) solution leverages the reliable Oracle test framework that is based on the DevSecOps and CI/CD best practices inherent to Oracle's methodology, ensuring you can develop the best networks for cloud. ATS is a robust and reliable solution for this new software delivery paradigm. Automating the complete testing process of Oracle's 5G core network functions, helps you execute functional, regression and performance test cases with a click of a button and zero manual intervention.

With Oracle Communications ATS you can perform the following testing operations

TEST

VALIDATE

DEPLOY



**Without
Oracle ATS****


4
Weeks

**With
Oracle ATS***

10
Hours

*This time may increase with addition of more test cases
**Approximation based on Oracle derived benchmark





Supporting more than **900** test cases spanning 5G network functions, the Oracle Communications ATS helps to better navigate the complexities of the 5G core validation process with more peace of mind, simplicity and agility.

With Oracle Communications ATS, you can improve:

Multi-scenario testing for 4G/5G interworking

Multi-platform solution testing for end-to-end use cases

**Multi-environment architectural testing for bare metal,
virtual and cloud native deployments**

And all with seamless integration in your cloud native environment.

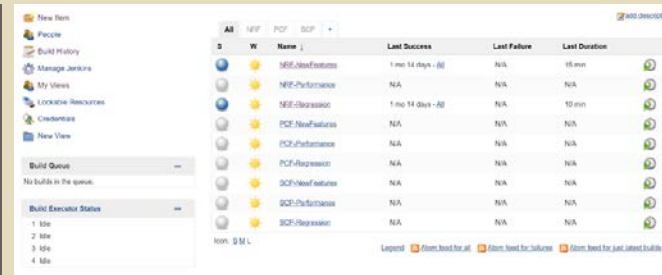
In the Gitlab survey with over 3,650 respondents from 21 countries, almost 83 percent of developers say they are releasing code faster and more often today than ever before, thanks to DevOps.

- GITLAB SURVEY -

The user journey with Oracle Communications ATS

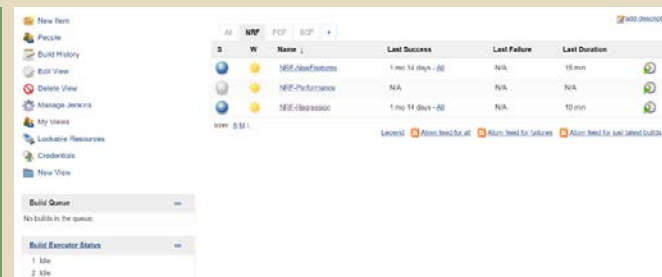
Oracle Communications ATS

PRODUCT TEST CATALOGUE



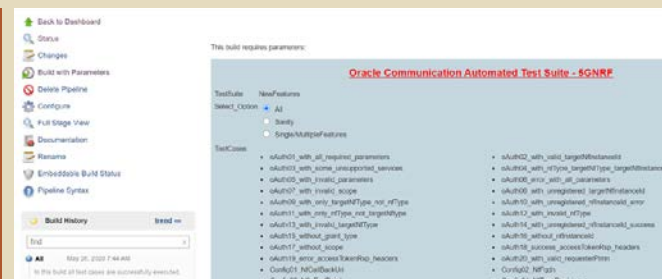
ID	W	Name	Last Success	Last Failure	Last Duration
1	W	NRF-Performance	1 mo 14 days - All	N/A	15 min
2	W	NRF-Performance	N/A	N/A	N/A
3	W	NRF-Performance	1 mo 14 days - All	N/A	10 min
4	W	PCF-Performance	N/A	N/A	N/A
5	W	PCF-Performance	N/A	N/A	N/A
6	W	PCF-Performance	N/A	N/A	N/A
7	W	SCF-Performance	N/A	N/A	N/A
8	W	SCF-Performance	N/A	N/A	N/A

TEST SUITE SELECTION



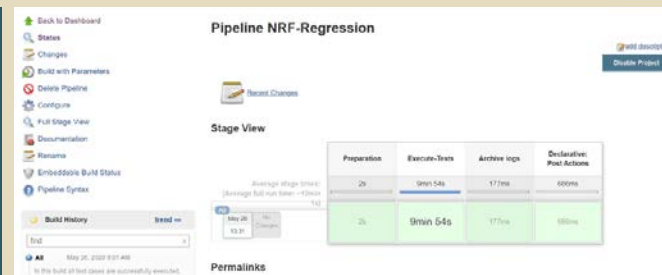
ID	W	Name	Last Success	Last Failure	Last Duration
1	W	NRF-Performance	1 mo 14 days - All	N/A	15 min
2	W	NRF-Performance	N/A	N/A	N/A
3	W	NRF-Performance	1 mo 14 days - All	N/A	10 min

TEST EXECUTION



Test Suite	Test Case	Test Result
Oracle Communication Automated Test Suite - \$GNRP	Test Case	Test Result

TEST MONITORING



Preparation	Execution	Archiving	Declarative Post Actions
2%	9min 54s	177ms	600ms

Based on Behavior-driven development (or BDD):
An agile software development technique that encourages collaboration between developers, quality assurance and non-technical or business participants in a software project.



Rethink your 5G core software testing strategy with Oracle Communications

5G and cloud native technologies with DevOps and CI/CD/CT introduce a number of innovative and disruptive networking paradigms, many of which had not been applied to mobile networks in the past. To reap the promised benefits of 5G and cloud native technologies, you need to rethink your testing strategy to build a robust and scalable core, which can deploy multitudes of network functions and services independent of the underlying frameworks.

As network standards evolve to embrace IT technologies, Oracle's IT heritage and modern software design practices offer open, secure and accessible communications cloud native and SaaS products. These industry best practices remove operational overhead and enable agile delivery and integration.

Oracle Communications ATS helps you avoid a lengthy, error prone, and complex manual testing process. Based on DevOps, it can be easily integrated with your CI/CD pipeline for more flexibility, and faster integration. Our aim is to help you navigate the complexities of the new cloud native 5G core technology with an automated testing framework that achieves your desired business outcomes and reduces your overall testing time so that you can focus on delivering innovative services.


Visit [**Oracle Communications Automated Test Tools and Scripts**](#) to learn more.







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